WHAT IS CLAIMED IS:

1.   A method for determining an index of organ health in the course of transplantation therapy comprising measuring an expression level of peripheral-type benzodiazepine receptor (PBR) in an organ whereby said index is determined.

5   2.   The method of Claim 1, further comprising obtaining a tissue sample of the organ and measuring the expression level of peripheral-type benzodiazepine receptor (PBR) in said tissue sample.

3.   The method of Claim 1, wherein the organ is selected from among one or more of kidney, heart, lung, cornea, skin, liver, bone marrow, vascular

10   graft, pancreas, small bowel and combinations thereof.

4.   The method of Claim 1, wherein the organ is a kidney.

5.   The method of Claim 1, wherein the index of organ health is an index of ischemia reperfusion injury.

15   6.   The method of Claim 1, wherein the index of organ health is an index of ischemia reperfusion injury incident to a renal transplant procedure.

7.   The method of Claim 1, wherein the expression level of peripheral-type benzodiazepine receptor is measured using a method chosen from one or more of immunohistochemistry, electrophoretic blotting, hybridization of a nucleic

20   acid probe to mRNA, observing binding of radiolabeled ligand, observing binding of fluorescence labeled ligand, observing binding of isotopically labeled ligand, *in vivo* scanning using isotopically labeled ligand of PBR and combinations thereof.

8. The method of Claim 1, wherein the index of organ health is determined at one or more points in the course of transplantation therapy selected from among time of organ extraction, time of organ storage, immediately prior to organ implantation, following reperfusion in a recipient, at one or more intervals following transplantation procedure and combinations thereof.

9. A method for assessing progress of organ regeneration during transplantation therapy by comparing the index of organ health, determined according to the method of Claim 1, to normal values of the index of organ health.

10. A method of predicting a likely outcome of transplantation therapy comprising determining an index of organ health by the method of Claim 1 and comparing said index with a correlation between said index and previous outcomes whereby a likely outcome is predicted.

11. The method of Claim 10, comprising a plurality of determinations of the index of organ health at different times during transplantation therapy whereby accuracy of a prediction of organ health is increased.

12. A method of assessing transplant therapy procedures comprising determining an index of organ health according to Claim 1 and comparing said index as a function of one or more varied parameters of said transplant therapy procedures.

13. A kit of materials for the practicing the method of Claim 1 comprising an indicator of PBR expression selected from among an antibody to PBR, a nucleic acid probe capable of specific hybridization to mRNA encoding PBR, a radiolabeled, isotopically labeled, or fluorescence labeled ligand of PBR and combinations thereof.

14.   The kit of materials of Claim 13, further comprising control and/or comparative samples.

15.   The kit of materials of Claim 13, further comprising a microanalytical apparatus.

5   16.   The kit of materials of Claim 14, wherein the microanalytical apparatus is a lab-on-a-chip.

17.   A method for treating a patient during transplantation therapy comprising administering an effective amount of a pharmaceutical composition comprising an agent which modulates expression of PBR.

10   18.   A method for treating a patient during transplantation therapy comprising administering an effective amount of a pharmaceutical composition comprising an agent which modulates the activity of PBR.

19.   The method of Claim 18, wherein progress of the treatment is monitored by measuring an index of organ health comprising measuring an
15   expression level of peripheral-type benzodiazepine receptor (PBR) in an organ whereby said index is determined.

20.   An improved method for investigating transplant therapy techniques in animals, the improvement comprising measuring an expression level of peripheral-type benzodiazepine receptor (PBR) in a transplanted or
20   autotransplanted organ.